ISSN 0704-3716

Canadian Translation of Fisheries and Aquatic Sciences

No. 5445

Simulation model for the food fisheries

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Original title: Simuleringsmodell for konsumfiskeriene

In: Christian Michelsen Institute. Rapport CMI-nr. 30706-1, 1988. (abstract, table of contents, preface, and introduction only)

Original language: Norwegian

Available from:
Canada Institute for Scientific and Technical Information
National Research Council
Ottawa, Ontario, Canada K1A 0S2

1989

10 typescript pages

Department of the Secretary of State of Canada | Secrétariat d'État du Canada

90-00626/

MULTILINGUAL SERVICES DIVISION – DIVISION DES SERVICES MULTILINGUES

TRANSLATION BUREAU | BUREAU DES TRADUCTIONS

Client's No.–N° du client	Department – Ministère	Division/Branch – Division/Direction	City – Ville
3038770	Fisheries and Oceans	Scientific Publications	Ottawa
Bureau No.–N° du bureau	**Language – Langue**	**Translator (Initials) – Traducteur (Initiales)**	
	Norwegian	PMJ	21/12-88

SIMULATION MODEL FOR THE FOOD FISHERIES

(Simuleringsmodell for konsumfiskeriene)

by

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Christian Michelsen Institute, CMI - Report No. 30796-1 (60 p)

Financed by Norwegian Fisheries Research Council, No. IV 801.019

Key words:Fishery, Model, Regulation, Simulation

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October 1988

SEC 5-25 (86–02)

Canada

ABSTRACT

This report describes the results from the preliminary project "Simulation Model for the Food Fisheries". The objective was to use an Icelandic model as basis for the studies and then evaluate to what extent it could be adapted to Norwegian conditions. The report shows that it is possible to develop a model on this premise.

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1 Preface

This report describes the results from the preliminary project "Simulation Model for the Food Fisheries" financed by the Norwegian Fisheries Research Council. The objective of the preliminary project was to evaluate an Icelandic model for food fisheries and to decide to what extent this model could be adapted to Norwegian conditions. The Icelandic model was developed chiefly by Professor Thorkell Helgason at the University of Iceland ; see Helgason and Olafsson (1988). Helgason is a co - author of this report.

It became obvious quite early that it was not practical to take the existing model over to Norway. There are many reasons for this, but perhaps the most important is that the model , which is now about 10 years old, is due to be re-programmed. Numerous changes have made the content into quite a "spaghetti". Many of the ideas in this report are still based on the Icelandic report or other studies by Thorkell Helgason and colleagues.

The model as it is presented in this report, represents a suggestion for how a simulation model for the food fisheries should be organized. It also describes which data should be used for Norwegian conditions.

Since the Icelandic model must be changed, this report will also form the basis for a new Icelandic model. We have furthermore been contacted by Henrik Gislason at the Danish Institute for Marine Biology since there is also interest in the model in Denmark. The result of all this is that a joint

Norwegian/Icelandic application for support for developing a model has been submitted. Danish participation would come at a later stage. The work with data will be performed in each individual country; however, purely methodological problems (especially statistical) will be discussed jointly. The joint application has been submitted to the Nordic Council of Ministers.

It is not a sure thing that a model can be used in many different countries. However, we feel that the logistics and programming technologies can be made uniform in this case as long as all parameters etc. are estimated in the individual countries. In the rest of this report the Nordic cooperation will not be discussed; the report will only look at the Norwegian preliminary study.

2 Introduction

The model described in this report was originally called "simulation model for the food fisheries". We are now of the opinion that a more suitable name would be "regulation model for the food fisheries". It is also possible that we should place more emphasis on bottom (demersal) fish than food fish. However, we are not going to make any changes here. The reason for going from "simulation" to "regulation" is the requirement for describing the essential feature of the model. Firstly ,we must identify that our central theme is regulation and economics, not

for example biology and population dynamics. Secondly we must emphasize the utilization, not the method, to our target audience, primarily government organizations.

The objective of the model is therefore to supply government authorities with a tool for evaluating various regulatory options. The model is primarily short term; this means that we primarily intend it to be used for one season. It will, however, be possible to run it over a longer period. Great emphasis will be placed on a flexible system for describing the quota regimes. Regardless of the flexibility it is still obvious that quota regulations can be proposed that cannot be handled in the model. This will always be the case with a model of this type. Our only, but important weapon against this problem is a program that is so well arranged that it can easily be changed.

The report is organized so that we first describe the model itself, with very few references to data, and we then discuss the data problem in depth. This is an advantage for the reader that is only interested in the data problem or only would like to know how we have modelled, but is a disadvantage for the reader that all the time (and with good reason) asks " - - but are there data to support this ? "

We debated for a long time if we should use a "trip model" or a model based on catch per day, an "effort model". The result is that the model can handle both situations although a decision must be made from the beginning of the data collection what model is to be used. It will not be possible to change a key word from

"trip model" to "effort model" without at the same time changing all relevant parameters.